SYNONYMY OF *LEONOMYRMA* ARNOLDI 1968 WITH *CHALEPOXENUS* MENOZZI 1922 (HYMENOPTERA: FORMICIDAE)*

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Arnoldi (1968) erected the genus *Leonomyrma* for a single new species, *L. spinosa,* which he had collected in July, 1949, near Peremetriaja, East-Kasachstan (USSR), at the lower course of Ural River. Up until present, only the type series of 4 ♀♀ and 14 ♂♂ have been known; no ☿☿ were found. In the course of a study in morphology and behavior of several species of the ant genus *Chalepoxenus,* I came across the description of *Leonomyrma.* A direct comparison of its holotype (♀) and an allotype (♂) with material of two *Chalepoxenus* species, *C. muellerianus* (Finzi) (= *C. gribodoi* Menozzi) and *C. kutteri* Cagniant, clearly revealed the synonymy of the two genera.

Genus *Chalepoxenus*

Chalepoxenus Menozzi, 1922: 257, worker, female. Type species by original designation: *C. gribodoi.*

Leptothorax (Temnothorax) muellerianus Finzi, 1921: 118, synonymized with *Chalepoxenus* by Müller 1923: 98.

C. gribodoi Menozzi, 1922: 257, synonymized with *C. muellerianus* (Finzi) by Kutter (1973).

Leonomyrma Arnoldi, 1968: 1809, female, male. Type species: *L. spinosa,* monobasic. NEW SYNONYMY.

Since the original description of *Leonomyrma* was published in Russian, I provide an English translation of its main contents:

"*Leonomyrma* K. Arnoldi gen. n. (Leptothoracini)"

"Type of the genus: *Leonomyrma spinosa* K. Arnoldi sp. n. Female: Head elongate rectangular. Antennae 12-jointed,

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mandibles triangular with dentate masticatory border. Frontal carinae long and straight, not forming scrobes for hiding the antennal scapes. Epinotum with two long spines. Petiolar nodes rounded above, low, petiole with a conspicuous ventral tooth, postpetiole with a long spine. The femora somewhat swollen. Erect hairs of the body long, fine, pubescence only present in legs and scapes. Wings with reduced venation, with a long, closed cubital cell.

"Male: Antennae 13-jointed, the long, slender scape overreaching the occipital margin, club 4-segmented, not shorter than the remainder of the funiculus. Eyes very large, convex. Masticatory border of mandibles dentate. Thorax narrow, with Mayrian furrows and strong epinotal spines. Hairs and wings as in the female."

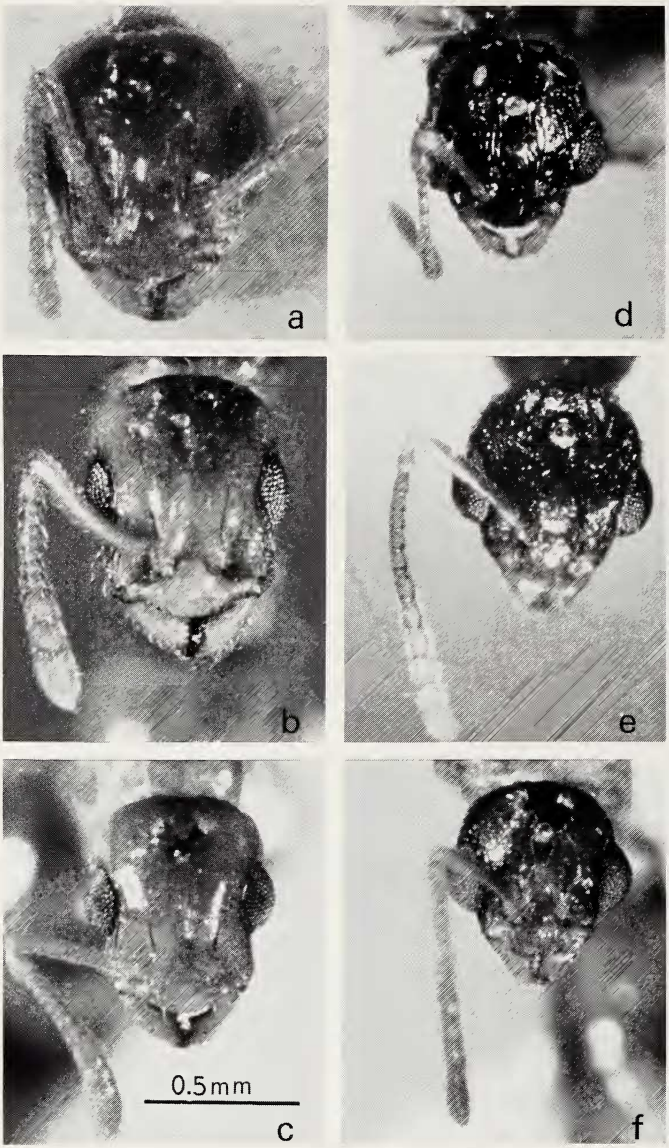
The description of the new species, *L. spinosa,* contains some measurements of the holotype ♀:

"Head length 0.85 mm, width 0.70, scape length 0.60, length of eye 0.30, thorax length 1.15, width 0.60, height 0.70, length of petiole 0.30, width 0.29, height without ventral tooth 0.36, postpetiole length 0.30, width 0.47 mm.

"Female: Head elongate, 1.5 times longer than wide, with nearly straight lateral margins, with distinct anterior and more rounded posterior corners. Eyes much larger than the genae. Clypeus moderately vaulted, slightly concave in the middle of the anterior margin, with an indistinct central carina. Frontal triangle impressed, smooth, indistinctly confined. Antennal club 3-segmented, only slightly shorter than the remainder of the funiculus. Last segment (like in the male) about the length of the two preceding ones together. Scape not fully reaching the occipital margin. Segment 3 to 7 of funiculus wide, not longer than wide. The long frontal carinae reaching behind the hind margin of the eyes. Thorax slender, elongate, somewhat flat above, anterior part of mesonotum narrowing, not covering the pronotal shoulders. Epinotal spines strong, longer than half their basal distance. Petiole short, massive, in profile with descending anterior and rounded upper surface, with a big tooth below. Postpetiole with a fingerlike spine. Dorsal side of

Table 1. Indices of *Leonomyrma spinosa* (from Arnoldi, 1968)

Indices	head	length	length	thorax		petiole		postpetiole	width
	length/width	head/scape	head/eye	l/w	l/h	l/w	l/h	w/l	postpetiole/petiole
4 ♀♀	1.21	1.46	2.90	1.93	1.66	1.13	0.93	1.45	1.68
6 ♂♂	1.25	1.28	2.37	2.03	1.41	1.36	1.12	1.62	1.27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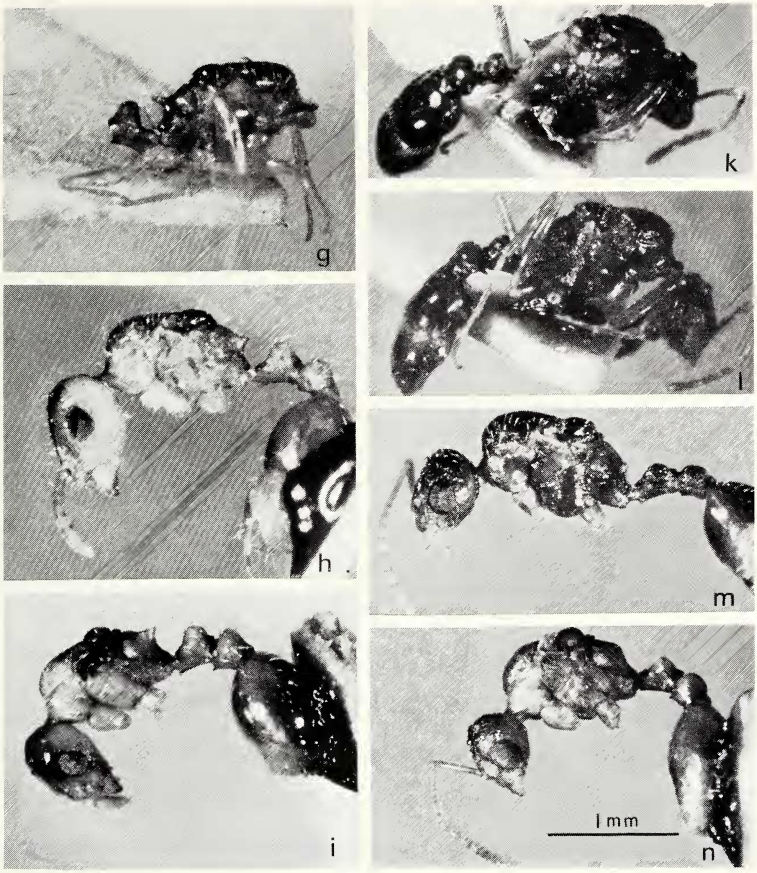

Fig. 1. (Facing page and above.) Heads and lateral views of *Chalepoxenus spinosus* (nov. comb.) (a, g—♀; d, k, l—♂; in k an epinotal spine, and in l the postpetiolar spine are clearly visible), *C. muellerianus* (b, h—♀; e, m—♂), and *C. kutteri* (c, i—♀; f, n—♂). Pictures were taken with a Wild Photomakroskop M 400.

alitrunk with very long, not dense hairs, which are more developed in the petioles and the gaster. Tibiae and scapes with sparse (not in all specimens preserved) outstanding hairs and a fine pubescence which is mostly lacking in other body parts. Body shining, head and thorax with long, sparse, longitudinal wrinkles, one particularly long wrinkle along the inner margin of the eye. Petioles smooth, gaster very smooth and shining. Light brown, gaster and top of the head brown, 3.75–3.95 mm.

"Male: Head elongate, 1.25 times longer than wide, with slightly vaulted sides and very large, very convex eyes. Antennal clubs with very long segments, all funicular segments much longer than wide. Clypeus elongate, reaching behind the genae, its anterior border blunted in the middle, vaulted, smooth like the triangular frontal area. Frontal carinae straight, parallel, visible until the anterior ocellus, all ocelli very large. Thorax narrow above, anterior part of mesonotum narrowing. Alitrunk shining, with sparse longitudinal wrinkles, petioles smooth, with ventral teeth as in the ♀, but smaller. Hypopygium and squamulae long, leaf-shaped. Brown, legs and antennae straw-yellow. 3.3–3.7 mm."

A comparison is made with other leptothoracine genera, and the author stresses that *Leonomyrma* exhibits some characters of social parasitic ants. Thus, the ventral projections of the petioles appear similar to those in *Formicoxenus,* the long frontal carinae resemble those of *Chalepoxenus,* the structure of the male antenna and the wing venation are said to match those of *Myrmoxenus,* to which *Leonomyrma* is closely related. It differs, however, from *Myrmoxenus* by the dentate mandibles of males and the queens, the strong epinotal spines, the rounded nodes, and the long and fine postpetiolar spine. From *Formicoxenus* it is distinguished by the number of antennal segments, shape of head, etc.; *from* Chalepoxenus *by lacking the long scrobes along the frontal carinae,* much stronger epinotal spines, and the long hairs; and from *Epimyrma* also by the long hairs, number of antennal segments, and so on.

Thus, the most important difference between *Leonomyrma* and *Chalepoxenus* refers to the antennal scrobes, since size and shape of epinotal spines and the density and length of hairs usually are characters varying widely within one genus. In the original description of

Chalepoxenus, however, Menozzi (1922) explicitly writes: "frontal carinae long, sub-parallel, and laterally confining an *antennal scrobe,* which is *little marked* and much shorter than the antennal scape" (translated from Italian). Direct comparison (Fig. 1) reveals that there is literally no difference between the antennal scrobes of *Leonomyrma* and *Chalepoxenus.*

In table 2 *L. spinosa* is compared with two *Chalepoxenus* species. I choose for reference *C. muellerianus* and *C. kutteri,* because they represent the two most different species in the genus. *C. siciliensis* and *C. insubricus* closely resemble *C. muellerianus, C. gribodoi* was already synonymized with the latter (Kutter 1973), and *C. tramieri* is close to *C. kutteri* (Cagniant 1983).

The comparison shows that there are some morphological differences between *L. spinosa* and *Chalepoxenus* species, but not more than between the latter two. *L. spinosa* is sharing some characters (postpetiolar spines in ♂ and ♀, long and acute epinotal spines in ♀, long body hairs) with *C. kutteri,* others (steeply ascending petiolar node, erect tibial hairs) with *C. muellerianus.* No crucial differences could be found which would justify the maintenance of a separate genus for *L. spinosa,* whereas its species rank in the genus *Chalepoxenus* appears sufficiently substantiated.

Since *C. muellerianus* is an active slavemaker (Ehrhardt 1980), and also *C. siciliensis, C. insubricus,* and *C. kutteri* (Buschinger et al., in prep.), we may predict that *L. spinosa,* too, will exhibit this particular life habit. The original material consists of alate sexuals, only, which were apparently caught during swarming. The lack of workers in the sample, therefore, is not surprising*.

Summary

The monotypical genus *Leonomyrma,* described by Arnoldi 1968 from 4 ♀♀ and 14 ♂♂ of *L. spinosa* from East-Kasachstan, USSR, is

**Chalepoxenus brunneus* Cagniant 1985, described from males and females from one colony, is a workerless and thus not a slave-raiding species. We (A. Buschinger, J. Heinze, H. Cagniant, X. Espadaler) collected 11 colonies at its type locality, Tizi-n-Test, Great Atlas of Morocco, on May 6, 1987. None of them contained *Chalepoxenus* workers, and their brood also consisted of male and female pupae only. Thus, *C. spinosus* also might be truly workerless. [Added in proof, May, 1987].

Table 2. Comparison of *Leonomyrma spinosa* Arnoldi with *Chalepoxenus muellerianus* Menozzi and *C. kutteri* Cagniant.

Characters ♂	*L. spinosa*	*C. kutteri*	*C. muellerianus*
Frontal area	not clearly marked	not clearly marked	not clearly marked
Frontal carinae	parallel, slightly divergent	slightly divergent	slightly divergent
Mandibles	dentate, 4–5 teeth	dentate, 4–5 teeth	dentate, 5 teeth
Mayrian furrows*	indistinct	indistinct	indistinct
Mesonotum	anterior part narrowing	wider, nearly as wide as long	wider, nearly as wide as long
Epinotal spines	long, fine	lacking, or blunt projection	blunt projection
Wing venation	—	identical in all 3 sp.	—
Petiole	truncated but long, with strong ventral tooth	truncated, short, with short ventral tooth	truncated, short, with very small ventral projection
Postpetiole	wide, large, with ventral spine	smaller, with short, very acute ventral spine	smaller, without ventral projection
Body hairs	long, not sparse	mostly lacking, very sparse on head, thorax	shorter, not sparse
Tibial hairs	some erect	decumbent	erect
Sculpture	head wrinkled, thorax longitudinally wrinkled, epinotum wrinkled, postpetiole shining	head wrinkled, thorax, epinotum, petioles, gaster smooth, shining	entire body coarsely wrinkled, except gaster

*Notauli

Table 2, continued.

Characters ♀	*L. spinosa*	*C. kutteri*	*C. muellerianus*
Frontal area	not clearly marked	not clearly marked	clearly marked
Frontal carinae	divergent	slightly divergent	divergent
Epinotal spines	long, fine, acute	long, fine, acute	shorter, more triangular in lateral view
Petiole	rounded, node very steeply ascending, ventral tooth present	rounded, with ventral tooth, shortly truncated, node less steeply ascending	rounded, with ventral blunt tooth, node steeply ascending
Postpetiole	with long ventral spine	with ± long v. spine	without spine, or with short tooth
Body hairs	sparse, long	sparse, long	sparse, shorter
Tibial hairs	decumbent	decumbent	erect

synonymized with the genus *Chalepoxenus* Menozzi 1922. A morphological comparison of the *Leonomyrma* holotype ♀ and an allotype ♂ with material of *Chalepoxenus muellerianus* and *C. kutteri* revealed a close similarity in most relevant characters. It may be predicted that *Chalepoxenus spinosus* (nov. comb.) will be a slavemaking ant like the other species of the genus.

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References

Arnoldi, K. V.
1968. Wichtige Ergänzungen zur Myrmecofauna (Hymenoptera, Formicidae) der USSR, mit einigen Neubeschreibungen (in Russian, German Summary). Zool. J. **47:** 1800–1822.

Buschinger, A., W. Ehrhardt, K. Fischer, and J. Ofer
(in prep.) Biosystematic revision of the slavemaking ant genus *Chalepoxenus.*

Cagniant, H.
1983. Contribution à la connaissance des Fourmis Marocaines *Chalepoxenus tramieri,* nov. sp.. Nouv. Rev. Ent. **13**: 319–322.
1985. Contribution à la connaissance des Fourmis Marocaines: *Chalepoxenus brunneus* n.sp. (Hymenoptera, Myrmicidae). Nouv. Rev. Ent. (N.S.) **2**, Fasc. 2: 141–146.

Ehrhardt, W.
1982. Untersuchungen zum Raubzugverhalten der sozialparasitischen Ameise *Chalepoxenus muellerianus* (Finzi) (Hym., Formicidae). Zool. Anz. **208**: 145–160.

Finzi, B.
1921. Primo contributo alla conoscenza della fauna mirmecologica della Venezia Giulia. Boll. Soc. Ent. Ital. **53**: 118–120.

Kutter, H.
1973. Zur Taxonomie der Gattung *Chalepoxenus* (Hymenoptera, Formicidae, Myrmicinae). Mitt. Schweiz. Ent. Ges. **46**: 269–280.

Menozzi, C.
1922. Nota su un genere e nuova specie di Formica parassita. Atti Soc. Ital. Sci. Nat. **61**: 256–260.

Müller, G.
1923. Le formiche della Venezia Giulia e della Dalmazia. Boll. Soc. Adriat. Sci. Nat. Trieste **28**: 11–180.